

Amendment of the Claims

The listing of the claims, below, will replace all prior versions and listings of claims in the application.

Listing of the Claims

Claims 1-8 (Canceled)

9. (currently amended) A process for the isolation of nucleic acids from a sample comprising the following steps:

- (a) applying at least one nucleic acid sample to a non-siliceous surface;
- (b) immobilizing the nucleic acids of the nucleic acid sample on the non-siliceous surface in the presence of:
 - (i) a compound selected from the group consisting of a salt of a metal and/or ammonium cation with a mineral acid, a salt of a mono or polybasic or polyfunctional organic acid with an alkaline or alkaline-earth metal, a chaotropic agent, and combinations thereof, and
 - (ii) a hydroxy-functional compound of an aliphatic or acyclic saturated or unsaturated hydrocarbon, a phenol, or a polyphenol, wherein the nucleic acids are reversibly immobilized on the non-siliceous surface;
- (c) releasing the immobilized nucleic acids from the non-siliceous surface with an elution agent, characterized in that the release takes place at a temperature T, whereby $10^{\circ}\text{C} \geq T \geq T_{\text{S,EM}}$, and $T_{\text{S,EM}}$ equals the freezing point of the elution agent.

10. (original) The process according to Claim 9, characterized in that the release takes place at temperature T, in which $10^{\circ}\text{C} \geq T \geq 5^{\circ}\text{C}$.

11. (previously presented) The process according to Claim 9, characterized in that the release takes place at temperature T, in which $10^{\circ}\text{C} \geq T \geq 0^{\circ}\text{C}$.

12. (previously presented) The process according to Claim 9, characterized in that the release takes place at temperature T , in which $10^{\circ}\text{C} \geq T \geq -5^{\circ}\text{C}$.

13. (original) The process according to Claim 9, characterized in that the release takes place at temperature T , in which $5^{\circ}\text{C} \geq T \geq T_{S,EM}$.

Claims 14-19 (Canceled)

20. (previously presented) The process according to Claim 9, characterized in that after the release step at least one additional step takes place:

- performing at least one chemical reaction with the nucleic acids.

Claims 21-36 (Canceled)

37. (previously presented) The process according to Claim 9, characterized in that the sample is introduced onto the top of the surface.

38. (previously presented) A process according to Claim 9, characterized in that the immobilized nucleic acids are subjected to a washing step which takes place with at least one washing buffer after the immobilization and before any release steps.

39. (previously presented) The process according to Claim 38, characterized in that the washing step consists of the following steps for each washing buffer:

- applying a predetermined quantity of washing buffer on the non-siliceous surface; and
- passing the washing buffer through the non-siliceous surface.

40. (previously presented) The process according to Claim 9, wherein said elution agent in step (c) of the process is an aqueous salt or buffer solution.

41. (previously presented) The process according to Claim 9, wherein said elution agent in step (c) of the process is water.

42. (previously presented) The process according to Claim 9, characterized in that the application and immobilization of the nucleic acids includes the following steps:

- mixing at least one nucleic acid-containing sample with an immobilization buffer;
- applying said at least one nucleic acid-containing sample with the immobilization buffer to the non-siliceous surface; and
- passing the liquid components through the non-siliceous surface in essentially the same direction they were added.

43. (previously presented) The process according to Claim 9, characterized in that at least one of the steps is carried out by an automatic device, in a fully automatic manner.

44. (original) The process according to Claim 43, characterized in that all steps of the process are performed by an automatic apparatus in a controlled sequence.

45. (original) The process according to Claim 43, characterized in that a majority of nucleic acid isolations or reactions take place simultaneously.

46. (previously presented) The process according to Claim 9, wherein the nucleic acids are reversibly immobilized on a non-siliceous surface in step (b) of the process in the presence of an aqueous solution of a salt of a metal and/or ammonium cation with a mineral acid.

47. (previously presented) The process according to Claim 46, wherein the aqueous salt solution is selected from the group of aqueous solutions consisting of alkaline halides, alkaline-earth halides, alkaline sulfates, alkaline-earth sulfates, alkaline phosphates, alkaline-earth phosphates, or mixtures thereof.

48. (previously presented) The process according to Claim 46, wherein the aqueous salt solution is selected from the group of aqueous solutions consisting of sodium halides, lithium halides, potassium halides, magnesium sulfate, and combinations thereof.

49. (previously presented) The process according to Claim 9, wherein the nucleic acids are reversibly immobilized on a non-siliceous surface in step (b) of the process in the presence of an aqueous solution of a salt of a mono or polybasic or polyfunctional organic acid with an alkaline or alkaline-earth metal.

50. (previously presented) The process according to Claim 49, wherein the aqueous solution of a salt of a mono or polybasic or polyfunctional organic acid with an alkaline or alkaline-earth metal is a solution of sodium, potassium or magnesium salts with organic dicarboxylic acids.

51. (previously presented) The process according to Claim 50, wherein the organic dicarboxylic acid is oxalic acid, malonic acid and/or succinic acid.

52. (previously presented) The process according to Claim 49, wherein the aqueous solution of salt of mono or polybasic or polyfunctional organic acid with an alkaline or alkaline-earth metal is a solution of sodium or potassium salts with a hydroxy or polyhydroxycarboxylic acid.

53. (previously presented) The process according to Claim 52, wherein the polyhydroxycarboxylic acid is citric acid.

54. (currently amended) The process according to Claim 9, wherein the nucleic acids are reversibly immobilized on a non-siliceous surface in step (b) in the presence of a hydroxy-functional compound ~~selected from hydroxyl derivatives of aliphatic or acyclic saturated or unsaturated hydrocarbons.~~

55. (currently amended) The process according to Claim 54, wherein said hydroxy-functional compound ~~hydroxyl derivatives of aliphatic or acyclic saturated or unsaturated hydrocarbons are~~ is selected from the C₁-C₅ alkanols.

56. (original) The process according to Claim 55, wherein said alkanols are selected from the group consisting of methanol, ethanol, n-propanol, tert-butanol, pentanols, and mixtures thereof.

57. (Canceled)

58. (currently amended) The process according to Claim 9, wherein the nucleic acids are reversibly immobilized on a non-siliceous surface in step (b) in the presence of ~~a hydroxy compound selected from~~ a phenol or polyphenol.

59. (previously presented) The process according to Claim 9, wherein the nucleic acids are reversibly immobilized on a non-siliceous surface in step (b) in the presence of at least one chaotropic agent.

60. (original) The process according to Claim 59, characterized in that the chaotropic agent is a salt selected from the group of trichloroacetates, thiocyanates, perchlorates, iodides, guanidinium hydrochloride, guanidinium isothiocyanate, and urea.

61. (previously amended) The process according to Claim 59, wherein the chaotropic agent is present at a concentration of 0.01 molar to 10 molar in an aqueous solution of the chaotropic agent.

62. (previously presented) The process according to Claim 61, wherein the chaotropic agent is present at a concentration of 0.1 molar to 7 molar in an aqueous solution of the chaotropic agent.

63. (previously presented) The process according to Claim 62, wherein the chaotropic agent is present at a concentration of 0.2 molar to 5 molar in an aqueous solution of the chaotropic agent.

64. (previously presented) The process according to Claim 61, wherein the chaotropic agent is selected from an aqueous solution of one or more of sodium perchlorate, guanidinium hydrochloride, guanidinium isothiocyanate, sodium iodide and potassium iodide.

65. (previously presented) The process according to Claim 38, wherein washing steps are carried out using salt or buffer solutions selected from aqueous salt solutions of metal and/or ammonium cations with mineral acids, including alkaline halides, alkaline-earth halides, alkaline

sulfates, alkaline-earth sulfates, alkaline phosphates, alkaline-earth phosphates, or mixtures thereof; aqueous solutions of salts of mono or polybasic or polyfunctional organic acids with alkaline or alkaline-earth metals, including sodium, potassium or magnesium salts of organic dicarboxylic acids including oxalic acid, malonic acid and succinic acid; aqueous solutions of sodium or potassium salts of a hydroxy or polyhydroxycarboxylic acid including citric acid; hydroxy-functional compounds of aliphatic or acyclic saturated or unsaturated hydrocarbons including C₁-C₅ alkanols and alditols; phenols or polyphenols; one or more chaotropic agents including salts selected from the group of trichloroacetates, thiocyanates, perchlorates, iodides, guanidinium hydrochloride, guanidinium isothiocyanate, and urea.

66. (previously presented) The process according to Claim 9, characterized in that the non-siliceous surface is a membrane.

67. (original) The process according to Claim 66, characterized in that the membrane is a hydrophobic membrane.

68. (original) The process according to Claim 67, characterized in that the hydrophobic membrane consists of a polymer with polar groups.

69. (previously presented) The process according to Claim 67, characterized in that the membrane is a hydrophilic membrane with a hydrophobic surface.

70. (previously presented) The process according to Claim 67, characterized in that the membrane is made of nylon, a polysulfone, polyethersulfone, polycarbonate, polypropylene, polyacrylate, acrylic copolymer, polyurethane, polyamide, polyvinylchloride, polyfluorocarbonate, poly-tetrafluoro-ethylene, polyvinylidene fluoride, polyethylene-tetrafluoro-ethylene-copolymerisate, a polyethylene-chlorotrifluoro-ethylene-copolymerisate, cellulose acetate, nitrocellulose, polybenzimidazole, polyimide, polyacrylonitrile, polyacrylonitrile-copolymer, cellulose-mix ester, cellulose nitrate, or polyphenylene sulfide.

71. (original) The process according to Claim 70, characterized in that the membrane consists of hydrophobic nylon.

72. (original) The process according to Claim 71, characterized in that the membrane is coated with a hydrophobizing coating agent selected from the group of paraffins, waxes, metal soaps, optionally containing additives selected from the group of aluminum or zirconium salts, quaternary organic compounds, ureic derivatives, lipid modified resins, silicones, zinc organic compounds and glutaric dialdehyde.

73. (previously presented) The process according to Claim 66, wherein the membrane is a hydrophilic membrane or a membrane made hydrophilic by pre-treatment.

74. (original) The process according to Claim 73 characterized in that the membrane consists of hydrophilized nylon, polyethersulfone, polycarbonate, polyacrylate, acrylic copolymer, polyurethane, polyamide, polyvinylchloride, polyfluorocarbonate, poly-tetrafluoro-ethylene, polyvinylidene fluoride, polyethylene-tetrafluoro-ethylene-copolymerisate, a polyethylene-chlorotrifluoro-ethylene-copolymerisate, cellulose acetate, polypropylene, nitrocellulose, polybenzimidazole, polyimide, polyacrylonitrile, polyacrylonitrile-copolymer, cellulose-mix ester, polyester, polysulfone, cellulose nitrate, or polyphenylene sulfide.

75. (previously presented) The process according to Claim 66, characterized in that the membrane has a pore diameter of 0.001 to 50 micrometer.

Claims 76-111 (Canceled)

112. (previously presented) The process according to Claim 9 wherein the nucleic acids are reversibly immobilized in step (b) on a non-siliceous surface, wherein said non-siliceous surface comprises a material selected from the group consisting of cellulose acetate; non-carboxylized, hydrophobic polyvinylidene fluoride; and massive, hydrophobic polytetrafluoroethylene.

113. (previously presented) The process of Claim 112, wherein said material is used in the form of a membrane.

114. (previously presented) The process of Claim 112, wherein said material is used in the form of a granulate.

115. (previously presented) The process of Claim 112, wherein the material is used in the form of a fiber.

116. (previously presented) The process of Claim 115, wherein a plurality of the fibers are organized as a fleece.

Claims 117-120 (Canceled)

121. (previously presented) The process according to Claim 62, wherein the chaotropic agent is selected from an aqueous solution of one or more of sodium perchlorate, guanidinium hydrochloride, guanidinium isothiocyanate, sodium iodide and potassium iodide.

122. (previously presented) The process according to Claim 63, wherein the chaotropic agent is selected from an aqueous solution of one or more of sodium perchlorate, guanidinium hydrochloride, guanidinium isothiocyanate, sodium iodide and potassium iodide.

123. (previously presented) The process according to Claim 68, characterized in that the membrane is a hydrophilic membrane with a hydrophobic surface.

124. (previously presented) The process according to Claim 68, characterized in that the membrane is made of nylon, a polysulfone, polyethersulfone, polycarbonate, polypropylene, polyacrylate, acrylic copolymer, polyurethane, polyamide, polyvinylchloride, polyfluorocarbonate, poly-tetrafluoro-ethylene, polyvinylidene fluoride, polyethylene-tetrafluoro-ethylene-copolymerisate, a polyethylene-chlorotrifluoro-ethylene-copolymerisate,

cellulose acetate, nitrocellulose, polybenzimidazole, polyimide, polyacrylnitrile, polyacrylnitrile-copolymer, cellulose-mix ester, cellulose nitrate, or polyphenylene sulfide.

125. (previously presented) The process according to Claim 9 for the isolation of nucleic acids from a sample further comprising, prior to step (a), the step of adjusting said at least one nucleic acid sample to binding conditions that permit reversible immobilization to a non-siliceous surface, and wherein there is a pretreatment of said at least one nucleic acid sample before and/or after adjusting the binding conditions of said at least one nucleic acid sample.

126. (previously presented) The process according to Claim 125, wherein said pretreatment is selected from the group consisting of salting out, filtration, centrifugation, enzymatic treatment, temperature adjustment, precipitation of non-nucleic acid material, extraction, homogenization, mechanical reduction, binding of contaminants to surfaces, and combinations thereof.

127. (previously presented) The process according to Claim 125, wherein said binding conditions permit reversible immobilization of RNA.

128. (previously presented) The process according to Claim 125, wherein said binding conditions permit reversible immobilization of DNA.

129. (previously presented) The process according to Claim 9, wherein said non-siliceous surface is a material in the form selected from the group consisting of a membrane, a granulate, and a fiber.